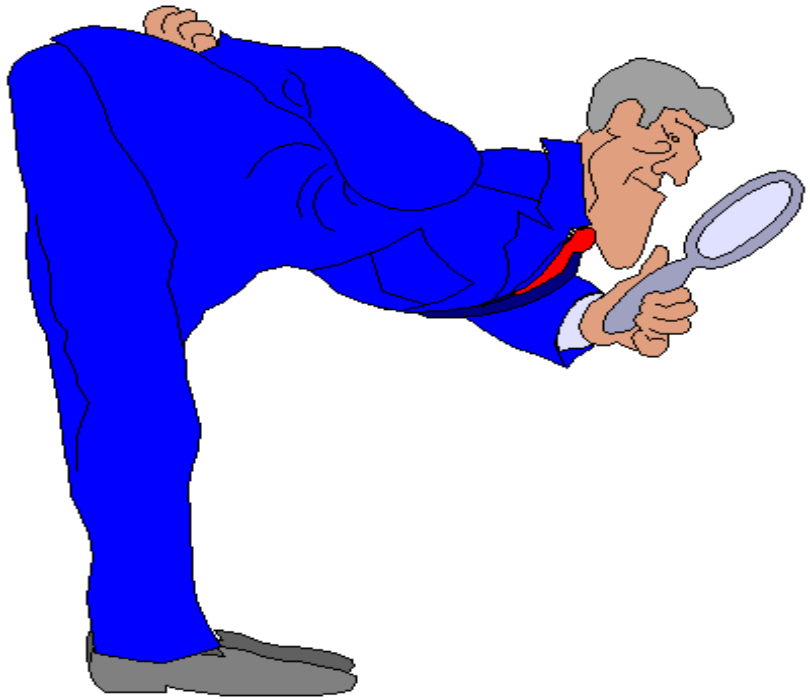
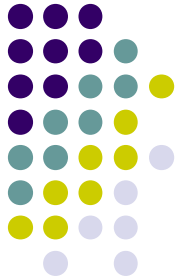
Psyc202

Research Methods in Psychology



Goodstein's Theory of Science

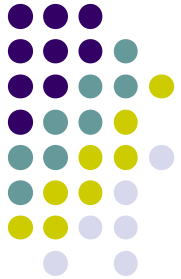


- Empiricism
  - knowledge is based on observation
- Verification of ideas
  - Testable hypotheses, theories
- Exchange of ideas and information
- Peer review

Goals of Science

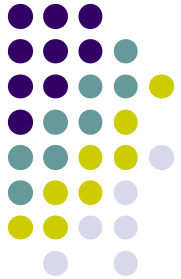
- Describe behavior
- Predict behavior
- Determining causes of behavior
  - Temporal precedence
  - Covariation of cause and effect
  - Alternative explanations
- Explanation of behavior

Basic and Applied Research



- Applied
- Welcome to the National Institutes of Health (NIH)
  - Alphabet soup
  - http://www.nih.gov/icd/
- Basic
- Welcome to the National Science Foundation (NSF)
  - http://www.nsf.gov/

Quantitative Research



- Everything is a number
- Think 30 or more for other than descriptive research
  - Per group (t-test, ANOVA)
  - Overall (correlations)

202 Demographic Class Data

Please answer the following questions:

1. Subject number: _____
2. Sex: Male _____ Female _____
3. Age (in years): _____
4. Research Experience: pick a number between 1 and 5 that rates your experience/knowledge of research/statistics

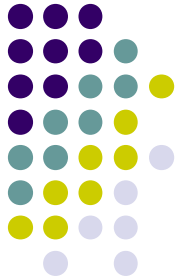
   1_____2_____3_____4_____5

   no experience a lot of experience
5. Library Experience: pick a number between 1 and 5 that rates your experience/knowledge of library skills

   1_____2_____3_____4_____5

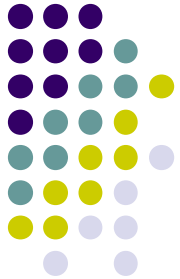
   no experience a lot of experience
6. Area(s) of psychology: _____

202 Demographic Class Data



Subj	Sex M=2;F=1	Age	Research	Library	Area(s)
1	1	24	1	4	Abnormal
2	1	30	2	3	Social
3	2	23	5	5	I/O
4	2	45	3	2	Cognitive
5	1	26	2	3	Forensic

Hypotheses and predictions

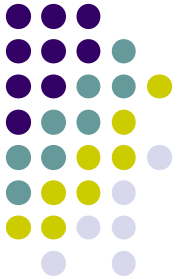


- Hypothesis
  - A type of idea or question
  - Makes a statement about something that may be true
  - Then test it
- Prediction
  - Anticipate that a certain outcome will occur

Theory

- A systematic body of ideas about a topic or phenomenon
  - http://www.allaboutscience.org/theory-of-relativity.htm
  - http://www.darwins-theory-of-evolution.com/

Library Research



- Data Bases
  - psycINFO
  - Pubmed
  - Cochrane Reviews
- Type of searches
  - Keyword
  - Author
  - Recent articles/reviews—the reference section
  - Top journals in your field of interest

Research Articles

- Formula writing
- Economy/clarity
- A lot of information in a very small space
- Separate the science from the writing

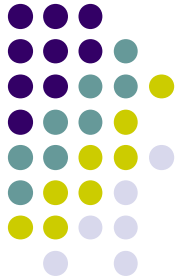
Research article sections

- Abstract
- Introduction
- Method
- Results
- Discussion
- References
- Tables/figure captions/figures

Abstract

- Read first/write last
- Should include brief information from every section of article
- Approximately 100 to 300 words

Introduction



- Problem statement
  - General problem needing (further) investigation
- Purpose of the study
- Operational definitions
  - General constructs
  - Specific methods/instruments
  - Dependent variables

Introduction (con’t.)

- Relevant past research
  - Building blocks (leggos)
- Theory/Hypotheses/Predictions
- Significance
  - Why is this research important?

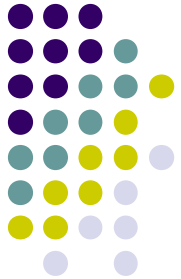
Method

- Participants
- Procedures
  - Instruments
    - Equipment
    - Measures
  - What happened
- Description of types of analyses

Participants

- How many
- Who are they?
  - Exclusion/inclusion criteria
  - Demographics
  - Where recruited from
  - Informed consent/payment

Procedures



- Instruments
  - What are they?
  - How are they scored?
  - Psychometric properties
    - Do they measure what they’re supposed to measure accurately and in a consistent/reliable way?
    - Validity
    - Reliability

Procedures (con’t)

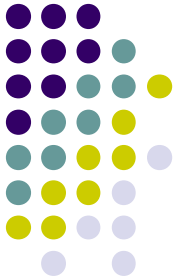
- What happened exactly
  - When and how long did it take?
  - Where measured
  - Tested individually or in groups?
- Description of type of analyses

Results

- Descriptive statistics

- Paragraph for each dependent variable

Results: generic paragraph



- Dependent variable
- Independent variable(s)
- Between or within subject
- Type of analysis
- Results of statistical test
  - Statistical phrase
    - Test statistic, degrees of freedom, probability
  - Mean(s) or percentage(s) if appropriate

Results: example

- If we were interested in potential gender differences in pairs of shoes owned…..

  The dependent variable was the number of pairs of shoes currently owned. The independent variable was gender. We used an independent *t*-test to determine if there were differences between males and females in the number of pairs of shoes. Females owned significantly more pairs of shoes than males, $t(22) = 3.05$, $p < .05$. Mean number of pairs for females was 10 (SD = 2.1), whereas mean number of pairs for males was 4 (SD = 3.4), see Figure 1.

Discussion

- General statement of findings
- Hypotheses/predictions vs. your results
- How do findings fit with past research?
- What do your results mean? Where do they fit?
- Limitations
- Future research